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IN REPLY REFER TO

02 September 1999

PIC 730.5.25.1 99-PIC-095(R)

MEMORANDUM FOR REGIONAL DIRECTORS, DCAA
DIRECTOR, FIELD DETACHMENT, DCAA

SUBJECT: Audit Guidance Memorandum on Contractor Implementation of Enterprise Resource Planning (ERP) Systems

SUMMARY

ERP systems are being widely adopted by contractors throughout the defense industry. Contractor and government representatives generally agree that early government involvement in ERP system implementation is beneficial and desirable. Thus, auditors should be actively involved in the ERP system implementation and take timely action to determine how the audit mission will be affected by it. ERP systems, although unique, are just another evolving form of EDP system.

The current functional, risk-based auditing approach inherent in DCAA's ten internal control system reviews (ICSRs) is equally applicable to ERP systems. Therefore, auditors should use the guidance set forth in the ten standard ICSR audit programs, CAM Sections 5-300 through 5-1400, and CAM Appendix C when auditing ERP systems. In addition, auditors should ensure that ERP systems comply with all applicable government regulatory requirements.

BACKGROUND

The focus of manufacturing systems in the 1960s was on inventory control. Software packages of that era were usually customized and designed to handle materials based on traditional inventory concepts. In the 1970s, the focus shifted to Material Requirements Planning (MRP) systems which translated the end item master schedule into time-phased net requirements for subassemblies, components and for raw materials planning and procurement. During the 1980s, the concept of MRP-II evolved which extended MRP concepts to the shop floor and to distribution management activities.

MRP-II was further extended in the early 1990s when companies were faced with the challenge of transforming their businesses in order to adapt to new competitive conditions. Corporate reengineering became a trend as businesses sought meaningful ways to examine their business processes and find ways to improve the efficiency and effectiveness of these processes. Businesses centralized and integrated certain operations that typically included the entire range

of activities within the business enterprise - engineering, finance, human resources, project management, etc. However, many of these businesses found it difficult to make significant changes without computer systems that support and enable business process transformation. Legacy or mainframe-based computer systems, which had been built and modified over several years, were not always adequate to support these initiatives. What was needed were integrated systems that embodied the best practices in business processes. This brought about the ERP software trend.

ERP systems are not unique -- they are merely the natural progression of EDP systems that include broad functionality and tight integration. These systems are generally comprised of commercial off-the-shelf (COTS) software, specifically designed to operate in client/server data processing environments. ERP systems are designed to share common databases and are usually accessible by many contractor employees performing a wide variety of tasks. ERP systems use best business practices that are designed into the software to organize businesses along process lines as opposed to functional lines. This process orientation allows the business to focus on streamlining and improving its processes. Since most of the software packages include tools that allow developers to configure these business processes without making program code modifications, overall system integrity and consistency is ensured. SAP, Oracle, PeopleSoft, BaaN, and Deltek are just a few of the vendors whose COTS products are being implemented at many defense contractor locations.

There are different approaches to implementing an ERP system. A functional implementation brings up the software one module at a time. This approach can be time-consuming and there may not be any noticeable benefits at the beginning of the project. A full implementation, ”big bang”, implements all or most of the modules at the same time for the entire business. If the implementation is reasonably successful, benefits can be demonstrated quickly and the overall cost of the project could be lower. A pilot approach implements all or certain modules of the software for a particular business unit, then upgrades the rest of the business one or more units at a time. This allows the business to gain experience with the software and take better advantage of lessons learned. This approach can take time, and benefits may not be evident until ERP systems are implemented at more business units. Some form of this approach is probably the most typical.

The primary differences between ERP systems and legacy systems are the tight functional integration of the various software modules and the use of a single input relational database in a client/server environment. Although auditors will need to be more concerned about access controls over the databases and the accuracy and validity of the data migrated from the legacy systems to the ERP systems, the internal control objectives are the same. In many respects, the auditor’s job could become easier in an ERP environment. Instead of auditing possibly hundreds of disparate systems and related databases, the auditor will be able to focus on a core package with a few modules. In addition, most of the ERP software includes built-in auditing and data retrieval functions that will enhance the efficiency and effectiveness of internal control and facilitate transaction testing.

GUIDANCE

A. ERP System Implementation

Contractor and government representatives generally agree that early government involvement in ERP system implementation is beneficial and desirable. Thus, auditors should be actively involved in the ERP system implementation and determine how the audit mission will be affected by it. Some actions the auditor should consider include, but are not limited to, those listed below. Most of these actions are already included in Agency guidance as indicated by the CAM references. They are reiterated here to emphasize that auditors should take a proactive role in ERP system implementation just as they do with any EDP system implementation. Accordingly, auditor actions before, during, or after ERP system implementation may include:

- Determine the overall scope and schedule of any ERP system implementations (CAM 5-106).
- Obtain an understanding of the differences between the contractor's current data processing environment and the data processing environment to which the contractor is converting (CAM 5-106).
- Determine the specific ERP software and its version or release the contractor intends to implement; e.g., SAP R/3, PeopleSoft, BaaN, or any of the several other available ERP systems. Generally, more recent releases and the implementation of aerospace and defense (A&D) specific products will more fully comply with government regulations. Current releases for the software suppliers listed above are included in Enclosure 1. Auditors should determine whether the contractor is implementing the latest version of whatever vendor's product the contractor is using.
- Determine the impact the ERP system will have on the contractor's ten accounting and management systems' internal controls and how the contractor intends to ensure the adequacy of the new system's internal controls (CAM 5-107).
- Review cost versus benefit analyses or business cases for ERP projects approved by management (CAM 14-602).
- Determine if costs and cost reductions have been identified and are incorporated into forward pricing rates (CAM 9-317 and 9-318). Potential cost reductions may include but are not limited to the following:
  - reduction or elimination of legacy systems
  - reduction in labor costs
  - reduction in inventory levels
  - improved reporting processes
  - cost-free upgrades to more current software releases
  - cost-free applications of A&D functionality (if appropriate)

- Work with the contractor to determine what access to the system is required to perform the various audits most efficiently and effectively. Auditor read-only on-line user access to the new system is expected along with the ability to apply computer assisted audit techniques that extract data into external files for more complex analysis. This access is well-founded in regulatory requirements, which provide for auditor access to contractor books, records, documents, and other evidence and accounting procedures and practices, **regardless of form**. Auditors should also take advantage of any contractor-provided training for system end-users. (CAM 4-500).
- Determine what additional hardware and software, if any, will be required to interface with the new ERP system (CAM 4-502.1c).
- Determine if ERP implementation results in any cost accounting changes, disclosure statement changes, and/or cost impacts (CAM Chapter 8).
- Review data conversion from the legacy system to the ERP system to ensure the integrity of the data entering the new system. Data conversion is generally a major project with the potential for significant errors. Contractors usually do not run their old non-ERP system in parallel with the new ERP system modules. However, an ERP system has many individual modules and each module may be implemented in a time-phased manner. For example, general ledger, cost ledger, and personnel modules, etc. could all be implemented at different times. Therefore, the auditor's early involvement in a single, or multi-phased, data conversion process is essential in order to ensure the integrity of the contractor' s reconciliation of data between the old and new systems. The auditor should ensure that the contractor maintains ending legacy system balances in an electronic format reconcilable to beginning ERP system balances. The data must be reconcilable both as to summary amount and as to allocation to final cost objectives. It is also critical that the auditor ensure that the contractor maintains data conversion information at the necessary level of detail. For example, depending on the type of contract funding, data reconciliation at the contract level, CLIN level or some other lower level of detail, may be required to meet regulatory requirements and contract terms. (CAM 5-1400).

B. Internal Control and Compliance Reviews at Contractors with ERP Systems

The current functional, risk-based auditing approach inherent in DCAA's ten ICSRs is equally applicable to ERP systems. This approach is appropriate for ERP systems because, as noted above, ERP systems are COTS EDP systems. They are functionally broader and more tightly integrated than most of the existing legacy systems. At contractors implementing ERP systems, the planning and timing of internal control reviews should be concurrent with ERP system implementation. During ERP implementation, auditors should share with the contractor the control objectives that need to be satisfied as noted in CAM for each of the ICSR areas. It is generally more efficient to build in controls than to modify the system later. If possible, the auditor should participate as a member of any IPT set up to review internal controls during or after ERP implementation. These IPTs typically include members from DCAA, DCMC, contractor internal audit, external audit, and the ERP system vendor.

In consultation with the regions, we reviewed the EDP related steps in the 1 July 1998 DIIS version of the ICSR audit programs to determine if the programs are adequate for ERP system reviews. We determined that the audit programs are generally adequate. However, we

did modify some audit steps to better direct the auditor to the appropriate guidance for audits of all EDP systems, including ERP systems. The revisions to the audit programs are included as Enclosures 2 through 11 for your immediate use. The enclosure includes a line-in line-out format. Auditors are encouraged to use the guidance set forth in the ten standard ICSR audit programs, CAM Sections 5-300 through 5-1400, and CAM Appendix C when auditing ERP systems.

We also plan to work with selected FAOs that are performing internal control reviews at contractors with up-and-running ERP systems to identify vendor specific supplemental audit program guidance that would be of benefit Agency-wide. This information will be shared with field offices at a later date.

C. Treatment of ERP System Costs

The treatment of ERP system costs for computer software developed or obtained for internal use is addressed in MRD 98-PAC-113(R), Audit Guidance on AICPA Statement of Position 98-1, *Accounting for the Costs of Computer Software Developed or Obtained for Internal Use*, dated 22 July 1998. Additional guidance on accounting for costs related to ERP systems, such as business process reengineering, is contained in 99-PAC-094(R), Audit Guidance on Accounting for Costs Related to Enterprise Resource Planning (ERP) Systems, dated 30 August 1999.

D. EDP Regional and Headquarters/Specialist Assistance

As with any EDP audit, auditors performing internal control system audits at contractors with ERP systems may need technical assistance. This assistance can be provided by regional and Headquarters EDP specialists. These personnel can provide technical assistance, such as applying computer assisted audit techniques for electronically reconciling data. Judgement should be used in contacting regional offices to obtain the necessary expertise (CAM 5-108f.).

E. EDP/ERP Training Requirements

We are in the process of evaluating and preparing/modifying EDP/ERP training. We plan to provide you with the results of the evaluation and the types of proposed training planned for ERP under separate cover.

CONCLUDING REMARKS

We invite your comments and suggestions to further refine the guidance as we gain additional experience with ERP systems. Please submit any comments or suggestions to Headquarters at DCAA-PIC@dcaa.mil. Please direct any questions regarding this memorandum to your regional office. Regional offices may address their questions to: Mr. Michael Weisz, Program Manager, Incurred Cost Division at (703) 767-3251, or e-mail at mike.weisz@dcaa.mil; or Mr. Wayne Murdock, EDP Auditor, Operations Technical Services Division at (407) 648-6481 x20, or e-mail at wayne.murdock@dcaa.mil.

Lawrence P. Uhlfelder
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Policy and Plans

Enclosures – 11 (Enclosures 2-11 are not included. They will be available in the October Standard Audit Program update.)

1. ERP Software Supplier Information
2. Revisions to the Control Environment and Overall Accounting Controls Audit Program
3. Revisions to the Billing System Audit Program
4. Revisions to the Budget and Planning System Audit Program
5. Revisions to the Compensation System Audit Program
6. Revisions to the EDP System General Internal Controls Audit Program
7. Revisions to the Estimating System Audit Program
8. Revisions to the Indirect/ODC System Audit Program
9. Revisions to the Labor System Audit Program
10. Revisions to the MMAS Audit Program
11. Revisions to the Purchasing System Audit Program

DISTRIBUTION: C

ERP Software Supplier Information

SAP (Systems, Applications and Products in Data Processing)

Current release: SAP R/3 Version 4.5

Current release Aerospace and Defense industry specific product: Version 2.0

PeopleSoft

Current release: PeopleSoft Release 7.5

Current release Aerospace and Defense industry specific product: Not Applicable

BaaN

Current release: BaanERP, also known as BaanV

Current release Aerospace and Defense industry specific product: Incorporated into BaanERP